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STALKING ANTS, SAVAGE AND CIVILIZED

A Naturalist Braves Bites and Stings in Many Lands to Learn the Story of an Insect Whose Ways Often Parallel Those of Man

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COLLECTION

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TO WRITE the word "ant" in Japanese, you take the character for "insect" (to the left, below) and add to it "unselfishness, justice, and courtesy" (center). Then you have the character (on the right) which means "ant" and also shows the flattering Japanese opinion of it.

虫 義 蟻

This delightful compliment is most interesting and many species undoubtedly deserve it; yet there are ants as savage and ruthless as the ancient Huns or Mongols—ants that devote their lives to foraging in vast armies, destroying the nests of others, and killing all insects and animals in their way (see Color Plate VIII). There are queen ants that enter a foreign colony, ingratiate themselves with the citizens, foully murder the true queen, and usurp her place. There are ants that raid the nests of their neighbors and kidnap their young as slaves (see Color Plate I).

GROW GARDENS AND KEEP "COWS"

Some, high in the scale of ant civilization, make their own gardens and grow their own special food. There are ants that keep "cows"; others that gather and store honey in barrels made from living nest-mates;* still others that use their own young as spools of silken thread in making nests (see Color Plate IV).

In sheer numbers, too, the ants challenge imagination. Their legions outnumber those of every other land creature in the world, except possibly some minute forms of life. So far, some 8,000 species, subspecies, and varieties have been collected and painstakingly classified—a different kind of ant for about every word of this article.

The immense amount of work devoted to studying ants in all regions of the world bears witness to their magnetic appeal to the interest of man.

Thus there have been published monographs on the ants of Madagascar and of New Caledonia; catalogues of the species which inhabit Brazil, Chile, Switzerland, Connecticut, and the peninsula of Baja California. One huge volume concerned with the ants of the Belgian Congo alone contains 1,139 pages.

Even the ants that crawled on the earth three million years ago live again in the pages of voluminous books, because their bodies happened to be entombed and preserved in the flowing resin of prehistoric pines, now known to science as the "Baltic amber."

LIKE SHIP LIFE AND HEATED HOUSES

Of these incredibly numerous and interesting creatures there are certain to be colonies on your lawns; there may be a nest or two in the rafters of your home and almost certainly some in the vicinity of the kitchen. Each colony of a species contains from a few to many thousands, even hundreds of thousands, of individuals.

The common little yellow house ant, *Monomorium pharaonis,* takes readily to life on shipboard, and so has traveled to all parts of the world (see Color Plate II). It takes kindly, also, to heated houses, and so, although a tropical ant, it thrives in northern countries and has become a pest everywhere.

One of our lawn ants, *Lasius niger,* in its several varieties spreads itself throughout the entire Northern Hemisphere, where it damages the golf greens of Washington, D. C., as impartially as it does the temple gardens of Japan. It is one of the most abundant single species of insect (see Color Plate II).

Some warm day, preferably after a shower, find a nice, flat stone on a sunny hillside and turn it over. There probably will be an ant nest beneath it—a series of channels leading from one cavity to another (see illustration, page 190). Worker ants rush about, excited at the sudden uncovering of their home. One, very much larger than the others, is the queen, or there may be several of them if the colony is a large one. If there are males, and they are present only during the mating season, they are usually much smaller than the rest, generally dark in color and wearing large wings.

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* See "Living Casks of Honey," in this issue of the NATIONAL GEOGRAPHIC MAGAZINE.

Piles of larvae and pupae, a few of them unusually big and destined to become females, will be whisked below out of sight while you are watching. If you look closely, you may see the eggs, little clusters of tiny white specks adhering together. The "ant eggs" of commerce are not eggs at all, but pupae of the large red ant. The cocoons, from which adult ants soon would emerge, are gathered in large quantities in Europe and dried and exported, to be used as food for goldfish and captive soft-billed birds. At the Zoo we sometimes put a few of them in the custard fed to the anteaters.

HONEYDEW ON ANTS' MENU

In our nest under the stone there may be one or more reddish beetles stalking slowly about among the ants. These are guests or parasites. Often they have a strange hold upon the affections of their hosts. They beg liquid food regurgitated from the communal crop, or storage stomach, of the ants, which sometimes so neglect their own young to pamper these insidious spongers that the colony becomes debilitated and dies out.

On the roots of plants in the passages there may be plant lice, or aphids and coccids, the "cows" of the ants (see illustration, page 197). As the weather gets warmer, the lice will be taken out and "pastured" on the roots of other plants, sometimes on Indian corn, where they do much damage to the farmers' crops. In this case, ants are an accessory to the fact. It is the aphid that does the harm, but the damage is greatly exaggerated by the ants' tender care.

By a stroking process similar to milking, the ants obtain from the plant lice a highly valued food substance, honeydew. This is the sweet sap of plants after it has been sucked out and passed through the bodies of the tiny insects, most of which take more than they can absorb.

As this forms the chief food of many ants, they tend and protect their cows as conscientiously as do any pastoral people. Sometimes they even build sheds of carton, a papery substance, on the trunks of trees to shelter them. At the approach of cold weather the ants sometimes gather them into their nests on plant roots, taking them out to pasture again when the danger of frost is over and their proper food plants are growing. A common sight about Washington in the spring is a troop of ants tending aphids that are feeding on the stalks of our common roadside weeds.

Examine carefully the nest under the stone on the hillside and you may find the home of another ant there, an almost microscopic yellow species (*Solenopsis molesta*), sometimes called the thief ant.

Making a nest adjoining that of a larger species, it tunnels into the larder of its neighbor and aggravatingly helps itself. The passages are so small that the big ants have no more chance of chasing their tiny tormentors than a man would have of pursuing a marauding rat into its hole. Uncovering two such nests sometimes precipitates a battle in which the larger ants get their long-sought revenge. The thieves can only cling annoyingly to their big opponents, which they do until bitten to death.

Break open a rotten log and a colony of a different kind may be revealed, with workers less excitable (see Color Plate II). Slowly and methodically they move their young away from the disturbance.

MARVELOUS RESOURCES OF THE QUEEN

Under a deeply imbedded rock you will perhaps discover a small family of the Troglodyte ants, blind dwellers in the dark, remaining motionless to avoid detection.

All ant colonies have one point in common. The members, excepting, of course, guests, parasites, and other intruders, are all children of a widow queen who has left the home nest on her nuptial flight. After mating high in the air, the male always dies, as he falls to earth far from the home nest and is helpless without workers to care for and feed him. The female, however, has marvelous resources within herself, and all alone she establishes a home and a family of her own.

After fertilization the queen creeps into some cranny beneath bark or under a stone;

extraordinary exceptions. One is Carebara, an ant of Asia and North Africa, noted for being a great enemy of the "white ants," or termites, on which it feeds (see Color Plate VI).

A RETINUE FOR HER HONEYMOON

When the mother-to-be Carebara goes on her honeymoon, a number of the almost microscopic workers attach themselves to her legs by their jaws, and in this way are with her to be of help when she starts the new colony.

Extraordinary and somewhat piratical methods of establishing colonies are followed by the females of some ants, usually species not physically capable of caring for their own first brood. One kind steals into the nest of a related species, hurriedly seizes and makes a pile of the pupae already there, and fiercely defends them from their rightful owners. When adult ants emerge from these pupae they are loyal to their kidnapper mother and, antlike, commence to care for her eggs and for the young hatched from them. This results in a mixed colony of two species.

A few species of Western ants of the genus *Formica* have very small females, thickly covered with soft yellow hair. Entering a colony of another, though closely related, species, they so ingratiate themselves with the workers that they are adopted and the rightful queen is murdered by her own progeny, who devote the rest of their lives to the new queen and her young. The original inhabitants eventually die off, leaving their native nest entirely in the possession of the usurper and her brood.

THE QUEEN IS MURDERED!

In North Africa a fertile queen of the "decapitating ant" (*Bothriomyrmex decapitans*) will fly to a nest of Tapinoma, a much larger ant, and loiter around the entrance until Tapinoma workers seize her. They take her into the nest, but for some reason do not eat her; whereupon she climbs onto the back of the rightful queen and saws at her neck until the head falls off. Then the Tapinoma workers adopt her and care for her eggs and young until the nest is populated only by the offspring of the regicide.

More males and females are produced; queens fly away, find another nest of Tapinoma, and repeat the process. One wonders how the host species has persisted so long, but it may be that it will eventually be exterminated by the decapitators; then the latter must disappear also, for such a parasite cannot exist without its host.

Certain ants have gone so far in parasitic development that the worker caste has entirely disappeared, leaving only males and females incapable of caring for themselves and entirely dependent on their ability to find nests of suitable host ants. Some fifteen genera of these have been discovered.

When the Amazon queen goes out to found a colony or "queendom," she enters a nest of the common Formica and immediately pierces the head of their queen with her long, curved, and sharp-pointed jaws. She is then adopted by the Formica workers, who devote the rest of their lives to caring for her progeny.

The Amazon, with its lethal mandibles, made only for fighting, is incapable of feeding itself or performing the ordinary home duties of an ant, so the supply of slaves has to be replenished from time to time by raids on neighboring Formica nests (see Color Plate I).

The hard-working defenders, with their short, triangular mandibles, are no match for their well-armed foes and the battle is always one-sided. It is interesting to see the Amazons, sometimes in more or less regular file, bearing home the captured pupae from which new slave ants will emerge. Later the captives occasionally help raid their old nests and enslave their own sisters.

The Amazons occur throughout the temperate regions of the Northern Hemisphere, rather rarely in eastern United States, but commonly in parts of the West. I have found them only twice in the vicinity of Washington, D. C., on the edge of Soldiers' Home Park and on Bull Run Battlefield, curiously enough.

THE "FORGOTTEN ANTS"

One feels sorry for some of the industrious species of Formica, solid citizens, but really the "forgotten ants," because they seem to be preyed upon by every sort of warrior ant and their nests are nearly always shared with various guests and parasites.

Two kinds of ants, very different from each other, sometimes live together amicaafter his good friend, Carol Emery, of Bologna, and the species after the Jesuit (*Emeryella schmitti*). This lone specimen was long the only representative of its kind in collections, and the species was something I especially wanted to find while in Haiti (see Color Plate VI).

At the end of a month's work I had found one solitary worker along a roadside. I had no fine-tooth comb with me, but for two months I tried every other method I knew of to discover the nest or more of the workers. Finally I reported to my teacher in zoölogy that, as far as I could make out, the species was now extinct and I had captured the last survivor on the island.

Then one evening I went for a stroll just before dinner and noticed on the path a millipede, or thousand-legger, moving in an unnatural way. Bending over, I saw that the millipede was dead and was being carried by an ant. The ant was *Emeryella!*

It took all of my strength of character to keep from seizing both ant and prey at once, but I smoked my pipe as calmly as I could and watched the ant till it leisurely entered a small hole at one side of a flat stone.

When the stone was turned over, there was an entire colony of some sixty workers. Later, in the same locality, I found a similar colony, and specimens of these have now been distributed to all the important ant collections in museums all over the world.

There were no females in either nest; so it is not improbable that this species lacks a special female, and that one of the workers functions as an egg-layer. At night there came to lights in my quarters a reddish ant, which from its general character we assume to be the male of the species and have so described it.

I had talked about *Emeryella schmitti* so much that it became well known to the scant white population of the island under the name of "Mary Ella Schmitt," and when I finally reported its discovery there was a great celebration among my fellow Americans, railroad men vacationing at Port-au-Prince.

Another missionary priest, Père Sallé, had sent to the Museum in Paris from Haiti a curious nest of vegetable fiber, not unlike a wasp's nest.

Forel, while rummaging about among the specimens, found it and tapped it on a piece of white paper. Several dead and dried ants dropped out. They belonged to the genus *Macromischa*, the most exquisitely formed of the ants and with beautiful metallic coloration—purples, greens, and reds (see Color Plate III). The genus is interesting, too, because it alone of the ants of the West Indies has developed into numerous species. About thirty are known from Cuba alone.

I remember one Christmas Day at the Mina Carlota, in the Sierra de Trinidad of Cuba. When I attempted to turn over a large rock to see what was living underneath, the rock split in the middle, and there, in the very center, was a half teaspoonful of brilliant green metallic ants glistening in the sunshine. They proved to be an unknown species of this genus.

FINDING A "LONG LOST"

One of the "long losts" was *Macromischa sallei*, in Haiti, and my heart was set on finding it again. Coming into Furcy one afternoon, mounted on a diminutive Haitian horse, I saw an ant walking across the road. It was *M. sallei.* I collected it and put it carefully into a vial of alcohol.

Père Plombé, most genial of hosts, greeted me and announced that dinner was nearly ready. On the little ridge where the church and priest's house stood were low bushes belonging to the genus *Baccharis.* While waiting for dinner I strolled among them and noticed an oval object on one of the bushes. I tapped it with my forceps and the next moment the thing was literally covered with ants. They were *M. sallei* swarming out to defend their home.

Other bushes contained other nests, and I shall not forget the thrill I had when I told Père Plombé, on my return to his home ten minutes later, that I had rediscovered this species and had enough specimens for all the museums in the world.

Père Plombé in his profession meets all sorts of people with all sorts of enthusiasms, but my elation over this find puzzled him a little. He gazed at me, then at the vials densely packed with ants, shook his head, and murmured to himself, "C'est curieux!"

The fire ant (*Solenopsis geminata*) is such a good traveler that one variety or another is found throughout the warmer parts of the earth (see Color Plate II). It gets its name from the painful, burning sting it can inflict. A colony contains vast numbers of workers. They have recently been reported as doing great damage to young quail in the Southeastern States. The birds, incapable of defending themselves, are stung to death.

Fire ants nest in almost any kind of locality and are extremely prolific. Even floods cannot daunt the fire ant, for it has been reported in Brazil that when the water rises and washes out a colony, the ants form a ball, queen and brood in the middle, and this living ball floats away to a tree or to higher ground, where the ants recommence housekeeping.

THE TAILOR ANTS USE LIVING TOOLS

The tailor ant (*Oecophylla smaragdina*) and a few other ants (*Polyrhachis*) are unique among all the earth's creatures, so far as we know, in that they use their young as tools in nest construction (see Color Plate IV).

Few adult insects spin silk, but the larvae of many have this ability to enclose themselves in silken cocoons, from which they will later emerge as fully formed adults. Oecophylla utilizes this accomplishment of its young in making its nests.

I have often torn one of the leaves that formed its box-shaped nest and then watched the proceedings.

At first there is a wild sortie on the part of the ants, all in fighting mood. They cannot sting, but they bite annoyingly.

After they have given up trying to find and destroy the intruder, worker ants seize larvae in their mandibles and bring them to the damaged portions. Other workers seize the edges of the leaves and pull them together, while those with the larvae pass them back and forth, stimulating the grub to exude silk, which sticks and holds the pieces of the leaves together.

After their silk has been used for the common good, the luckless larvae have to sleep naked!

The tailor ant lives throughout the Old World Tropics and is one of the few ants that are greenish in color, though some of its varieties are red, and one, in West Africa, is brown almost to black.

COLLECTING FROM TREE TOPS

In the Solomon Islands this pugnacious Oecophylla abounds. On the island of Malaupaina I had for two weeks the unusual and delightful good fortune for a naturalist of being able to collect among the tops of high trees. A plantation company was felling the original forest, clearing the land for coconuts. One enormous tree after another was felled, and as soon as it came down I would go among the upper branches and collect.

Oecophylla was abundant, and I can safely say that there was scarcely a moment of daylight during those two weeks when an ant was not biting me on the neck. I would instinctively reach up, seize the little creature, break its neck between my thumb and forefinger, and go on collecting.

But once, as I crushed one of them, I noticed that it was unusually hard. It was another ant, a Podomyrma, rare and desirable. After that it was necessary for me to seize each attacking ant and carefully examine it before destroying it, so as not to crush a valuable specimen by mistake.

Eight thousand different kinds of ants are a large order, but students have simplified their study by a classification which is one of the finest that has been done for any insect group. They have been arranged into different families, and the first and most primitive of these are the Ponerines, the ant savages. Like cavemen, they live solely by hunting. Big, strong jaws run in the family and at the other end they carry a poisonous sting. Their headquarters are the Tropics, but a few forms extend into the colder climates also. Some are minute in size, but others, the largest of the ants, attain a length of more than an inch and have antagonistic dispositions more than worthy of their bulk.

In Bolivia we found that one kind, nearly an inch long, locally called "buni," but classified as *Paraponera clavata*, would sometimes actually drive the bare-footed natives from their own corn patches.

PROMENADING IN THE FOREST

A still larger species, the "great, terrible ant" (*Dinoponera grandis*), the "tucandero" of the Brazilians, also inhabits tropical South America. At Belém (Pará) every day we could see individuals an inch in length, black and shining, walking unconcernedly along the path in the forest.

One primitive group includes the bulldog ant of Australia, which gets its name from its powerful biting jaws; also it has a sting so efficient that it inspires respect (see Color Plate VII). There are many species, and they range from a third of an inch to more than an inch in length. Some live

Termites (see Color Plate VI) form the chief food of many of these Ponerines. Sometimes they establish their colonies in the termite nest itself, somewhat apart from the rightful owners, but still near the source of their living food supply.

In Bolivia I found in a decayed log a populous nest of termites and in the same log was a colony of red hunter ants (*Centromyrmex*). In the chambers of the ants' home I noticed on the top of each larva the body of a decapitated termite. Near by were little piles of dead termites to provide a second helping.

ARMY ANTS ARE LIKE MONGOL HORDES

If these Ponerines, living in small colonies and subsisting by hunting, may be compared to such primitive peoples as the Australian aborigines, the Ituri pygmies, or the Carapuna Indians, then the next group, the Dorylines, or army ants, may be likened to the Mongols of Genghis Khan, traveling in countless hordes (see Color Plate VIII).

Blind workers of different sizes, marching in efficient, ruthless military formation, they leave a wake of death behind them. Nothing in their path is safe. Holes in the ground are entered, tall trees are climbed, and even human dwellings invaded in search of insect prey.

Some raid only the nests of other ants for the larvae and pupae on which they live; some seem especially fond of cockroaches; and I was once driven out of my forest hut by a swarm of these ants pouring up over the door-sill log like a black Niagara flowing the wrong way. I sat outside for hours, until the invaders eventually left, carrying with them what looked like pounds of dismembered cockroaches, spiders, and other late but not lamented fellow housemates of mine.

Different species of these driver, or legionary ants, inhabit all of the continents, but they are most abundant and the armies are largest in the Tropics. Our North American species, some of which range as far north as North Carolina, are small and often subterranean in habit.

EVEN THE ELEPHANTS MAKE WAY

In Africa and in South America roam the mightiest legions. It is said that even the elephant will get out of their line of march, and that the anteater itself might find them too much of a good thing. Certainly, any living creature that becomes covered with these biting, stinging demons is in a pathetic plight. As they are blind, the size of their quarry means nothing whatsoever to them.

Once, in Africa, I leaped into a stream after carelessly stepping into a file of ants. A dozen or so of the vanguard had already clamped onto my leg and kept stinging me, even under water, until I plucked them off.

The number of individuals in a big horde of these marauders cannot be estimated. The column may be an ant or two wide, or it may be over a foot or a yard wide. One army stayed in the vicinity of our camp in Bolivia for weeks, so that I came to feel well acquainted with it as a whole, though not individually.

For hours I sat alongside and watched the column flowing along, waiting for the curious parasitic beetles that live with the ants and accompany them on their march. The beetles so closely resemble the ants that it required experience to single them out in the rapidly moving procession.

When one came along at last—one that I saw—I would grab at it with my forceps. Then a terrific commotion would result. Flanking columns hurried out to find who was molesting them, so I would retreat ingloriously and wait until the column of blind investigators had reorganized itself before resuming my watch.

FORMING A LIVING BRIDGE

Several times I have seen the army form a bridge across a rivulet. In doing this, numbers gather in a mass on the edge and cling together; others venture out; still others closely intertwine their legs till an elongated mass of living ants is extended across; then the army passes over, using this bridge.

I could not find out how the bridge was broken up, because night would come with the file still crossing. Neither could I locate the other end of this file, and I still think of it as marching endlessly and eternally through the Bolivian forest.

In the American Tropics legionary ants are encountered on every walk in the woods, yet the discovery of one of their queens is an entomological event. The female is wingless, an ungainly creature, blind like the workers, her abdomen greatly enlarged.

There is no permanent nest, though some species make temporary ones in the ground and remain there till the hunters have thinned out the near-by fauna, reminding us of the yearly hunts of the ancient Mongols. Then the whole colony migrates, taking with them the larvae and the queen.

Sometimes, during the heat of the day, they cluster in a hollow tree or some other depression, a huge swarm of ants, sometimes a bushel of them in one close mass, with brood and female in the center for protection.

With them may also be found the parasites, usually beetles or wasps that superficially resemble the ants. In watching the file one may see one of these inquilines every several minutes, or one may not notice one for an hour. The capture of a swarm, with dozens or hundreds of them at the same time, is to the collector nothing less than a gold mine. He is certain to get badly bitten and stung, as he breaks up the mass and searches for the prizes, but it is worth it.

LONG LIVES THE QUEEN!

The one duty of the queen is to lay eggs, and this she does almost continually, the colony increasing in number and in strength. She may have a long life, for there is one record of a queen confined in a glass observation nest who had survived for 17 years, and I once saw a 14-year-old queen who had spent her life in the collection of a friend of mine in England.

The tasks of housekeeping, nursing the babies, and gathering food are left to the worker, the undeveloped female. Contrary to general opinion, only a small percentage of workers are actually out of the nest at any one time. At home they spend much of their time in grooming themselves and each other.

Most ants subsist entirely on liquid food. Even the pieces of insects which they eat are taken into the mouth cavity and the liquid pressed out and swallowed. The dry pellets are spat out. These hard pellets, by the way, sometimes are used as food by other insects which share the nest with the ants.

ANTS HAVE MILLERS TO GRIND GRAIN

Naturally, in a colony of many thousand individuals a large amount of food is consumed. It has been estimated that a single nest of the large mound-building ants of Europe, practically the same as those we find throughout our Far West, collects each day insects to the number of several hundred thousand.

The harvesting ants, most of them inhabitants of deserts, have developed millers, with heads enormously enlarged to contain the muscles of the jaws.

The ordinary worker goes out day after day and brings in seeds of plants. These the millers laboriously grind into a sort of flour, which is stored in the nest.

Once in Arizona, while collecting ants, I noticed a small turret entrance to a nest. Around this were a number of mammoth ant heads. Later I found that these were the heads of the millers. The harvesting season was over. The millers had done their duty in grinding the grain; whereupon the workers, provident always, had sawn their heads off. It was more economical from the standpoint of the colony to raise a new brood of millers next year than to carry these over during the times of depression.

From the train window the traveler in the Southwest sees large ant hills dotted over the desert. These are usually nests of the bearded agricultural ants, Pogonomyrmex (see Color Plate II). They live on the seeds of grasses which they gather and store in their nests. There is usually a large area kept carefully cleared about the nest, which makes the mound stand out prominently. Sometimes surrounding these cleared areas is a fringe of the grass that supplies the food of the ants.

From this, some observers have thought that the ants intentionally plant their own food. This is probably not so. Refuse from the nest is carried out and deposited at the edge of the clearing, and with this refuse may be some of the seeds which germinate there. It is thus by accident that a source of food supply appears adjacent to the nest.

These desert harvesters are fierce in the defense of their home, and it is said that small children have been stung to death while playing on the nest. I have been stung a number of times while collecting Pogonomyrmex and can testify that the sting leaves a dull pain which lasts for some time.

Honey ants are another example of those that look ahead to the days of famine, piling up quantities of honeydew in living containers (see text, page 193, and illustrations, pages 194 and 195).

The fungus-growing ants, chiefly inhabiting tropical America, but also extending into the Temperate Zone as far north as New Jersey, actually plant and cultivate their food. They belong to a distinct group, called the Attinae, and all they ever eat is a little mushroom which they themselves grow.

Any evening, on a walk in southern Texas or in practically any part of tropical or subtropical America, one will see files of these ants, each ant bearing a bit of leaf. For this they have been called "parasol ants" and "leaf-cutting ants" (see Color Plate V and illustration, page 174).

One species is a terrible pest to citrus planters in the Tropics. The colonies are enormous. Sometimes an orange tree will be stripped of leaves in a single night.

The ants carry these leaves into their nests along well-beaten trails. There they are chewed into a paste by the smaller workers. This paste is used as a stratum on which to grow the minute mushrooms on which the ants live. The smallest members of the colony serve as gardeners as well as nurses and take care of the crop. For fertilizer most of them use leaves, but some use bits of straw, and others caterpillar droppings, on which to raise the fungus.

The queen ant, before she leaves her parent nest, takes into her mouth some spores of this fungus. When she lays her first eggs she crushes them and deposits these spores upon them. The fungus starts and maintains itself there until her second crop of eggs develops into young ants, who go out at once to obtain new food for the home garden.

TERMITE IS KIN TO COCKROACHES

There is an old saying that termites are called "white ants" because they are not white and because they are not ants. A true ant is a relative of the bees and wasps; the termite is kin to the cockroaches. But these two groups, so widely different in origin, have developed somewhat similar ways of living. In termites we have the differentiation into soldiers and workers, and we have the sexual forms, males and females (see Color Plate VI).

The latter, however, pair for life; so, instead of the widowed queen that we have in the ant nest, we find in the termites a king and a queen. Their method of establishing the colony is essentially the same. There are flights when the air is filled with flying white ants, their wings dropping off much more easily than do those of the true ants.

I remember one occasion in the Solomon Islands when such a flight occurred while we were at dinner, and we hastily withdrew from the vicinity of the lights in order to keep our soup from being entirely wings. These, however, are not mating flights, as in the ants, but are distributional flights. Pairs go out, find a suitable place, and commence housekeeping together.

Like the ants, termites build various forms of houses, mounds, and tree nests, but often live in the heart of the tree itself. Their food consists almost entirely of wood, which they chew up and swallow, but some of them raise fungus, reminding one of the fungus-growing ants.

With one or two exceptions, they are denizens of the dark. Exposure to heat causes the death of most species immediately.

They are much more injurious than ants. In certain tropical countries the termites' habit of destroying books makes it difficult to maintain libraries. Even as far north as Washington, D. C., it has been necessary to replace floors in the National Museum and other public buildings on account of the depredations these insects have committed.

Ants, like man, live in complicated societies. They recognize fellow citizens only by their odor, and any that do not smell the same are enemies.

Ants have an intense patriotism, evinced by their willingness to fight and die for the home nest; and a touching devotion to their mother and to the babies in the nest. They are, for the most part, hard workers, and each individual does its utmost to contribute to the general welfare. They build complicated homes, and they show a wise providence in the storage and preservation of food.

The joker may say, also, that the ant has attained complete perfection in one field: the women do all the work.

On the other hand, there are among ants morons, paupers, and other parasites; thieves, ingrates, murderers, and kidnappers.

So, in reply to a question which has been asked me in all seriousness:

"Which is the more intelligent, man or the ant?" I feel inclined to reply:

"It depends on the man—and the ant!"